

CLAIMS

1. A tube of zirconium-base alloy for constituting all or
the outside portion of cladding for a nuclear fuel rod or of a
5 guide tube for a nuclear fuel assembly, made of a zirconium-
base alloy containing, by weight, 0.8% to 1.8% niobium, 0.2% to
0.6% tin, and 0.02% to 0.4% iron, plus inevitable impurities,
and having a carbon content controlled to lie in the range 30
ppm to 180 ppm, a silicon content in the range 10 ppm to 120
10 ppm, and an oxygen content in the range 600 ppm to 1800 ppm.

2. A tube according to claim 1, wherein the alloy is in
recrystallized state.

3. A tube according to claim 1, wherein the alloy is in
relaxed state.

A 15 4. A tube according to claim 1, ~~2, or 3,~~ wherein the alloy
has set contents: 0.9% to 1.1% niobium, 0.25% to 0.35% tin, and
0.2% to 0.3% iron.

5. A method of manufacturing a tube according to claim 1,
including the following steps of:

20 • making a bar of an alloy containing 0.8% to 1.8% niobium,
0.2% to 0.6% tin, and 0.02% to 0.4% iron;

• after heating in the bar to a temperature in the range
1000°C to 1200°C, quenching the bar in water,

25 • drawing the bar into a blank after heating to a tempera-
ture in the range 600°C to 800°C;

• annealing the drawn blank at a temperature in the range
590°C to 650°C; and

30 • cold rolling the annealed blank in at least four passes
into a tube, with intermediate heat treatments at temperatures
in the range 560°C to 620°C.

6. A method according to claim 5, wherein the rolling
passes are performed on tubes having increasing recrystal-
lization ratios.

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7. A method according to claim 5 or 6, further including a recrystallizing final heat treatment step at a temperature in the range 560°C to 620°C.
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- 5 8. A method according to claim 5 or 6, further including a strain relieving final heat treatment step at a temperature in the range from about 470°C to 500°C.

CONFIDENTIAL INFORMATION
EXCLUDED PURSUANT TO
THE ATTACHED STIPULATION

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